12-23-2010

Educational Policies Committee Program Proposal, College of Engineering, December 23, 2010

Utah State University

Utah State University
Sustainable Waste-to-Bioproducts Engineering Center

Section I: Request

A request is made to establish the Sustainable Waste-to-Bioproducts Engineering Center that is a collaboration between the Department of Biological Engineering in the College of Engineering at Utah State University (USU), and the Environmental Department, City of Logan, Utah. The center office will be administered in the Department of Biological Engineering in the College of Engineering. The Dean of the College of Engineering will appoint two Co-Directors, one from the Department and one from the City of Logan. The first Co-Directors will be Dr. Ronald Sims, Head of the Department of Biological Engineering at USU, and Mr. Issa Hamud, Director of the Logan City Environmental Department. The center will utilize resources and facilities of the City of Logan that are located at the sites of the Logan Lagoon Wastewater Treatment Plant and the Logan Landfill, and of the USU Biological Engineering research laboratories. The center will develop new bio-based sustainable engineering technologies that convert wastes into bioproducts for municipalities and industries in Utah, the Intermountain West, and the nation.

Section II: Need

Utah municipalities, including the City of Logan, are in need of expertise related to biological engineering research that addresses sustainable management of waste, including wastewater and solid wastes, that cannot be adequately addressed with current technologies in an economical and sustainable way. The proposed center will utilize the expertise of the USU Department of Biological Engineering, including experimental and academic-based knowledge, to address the following needs of the City of Logan and other Utah municipalities: (1) to develop new bio-based technologies for utilizing wastes as a resource for sustainable reuse and recycle of nutrients, (2) to meet new national standards for water quality, and (3) to produce waste-based bioproducts that include algae biofuels for power and transportation as well as for bioplastics production. Additional bioplastics and other products of value will be developed from waste-based chemicals that occur in both wastewater and in landfill materials. The technologies developed through the center will also be applicable to other communities in Utah, the Intermountain West Region, and the nation.

The center will also contribute to national security through energy independence that is based on the local development of sources of bioenergy and bioplastics - through the utilization of waste materials. Waste-based bioenergy, bioplastics, and other bioproduct technologies developed through the center will provide new alternatives for addressing sustainable waste treatment and bioenergy production for the state, the region, and the nation.

Section III: Institutional Impact

The proposed center will not negatively affect enrollments in the instructional program of the Biological Engineering Department. No changes in faculty or staff are required. No new facilities are required because the Center will utilize the existing physical facilities that are located at the City of Logan sites that include the Wastewater Lagoon Treatment System and the Sanitary Landfill, and the research laboratories of the USU Department of Biological Engineering. Equipment and instrumentation for the center activities are currently in place and were provided through local and federal government support in the form of contracts and grants, and through industry contributions.

Section IV: Finances

The costs of operating the center activities will come from external support through contracts and grants provided by state, regional, and federal organizations, and from industry. No budgetary impact on other programs or units within USU or the City of Logan will occur with the implementation of the proposed center.